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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/820,415	03/29/2001	Mark Heimbaugh	3123-347	5595

32093 7590 03/31/2004

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EXAMINER	
WONG, KIN C	

ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 03/31/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/820,415	HEIMBAUGH, MARK	
	Examiner	Art Unit	
	K. Wong	2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 20-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

This is a response to amendment filed on 1/9/04.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims (1-18 and 20-33) are rejected under 35 U.S.C. 103(a) as being unpatentable over Patton, III (5889629) in view of Kanda et al (6594102).

Regarding claim 1: Patton, III discloses an apparatus for retracting a disk drive actuator arm assembly (in col. 5, lines 19-49 where Patton, III describes a retraction function (or parking) of the actuator arm when power failure or undervoltage is detected which is in line with page 14 lines 3-13 of the instant specification), including:

a spindle motor (element 30 in figure 1 of Patton, III) which generates a back electromotive force voltage (see col. 5, lines 28-49 of Patton, III);

a feedback circuit connected to the DC [DC-to-DC] converter (DC-to-DC - voltage regulator is well known to be including the DC-to-DC conversion function) and controlling switching thereof (as depicted in figure 1);

a retract circuit, connected to the DC [DC-to-DC] converter and powered thereby; and

a voice coil motor (VCM – element 32 in figure 1) activated by the retract circuit and operating to retract the actuator arm assembly (element 36 in figure 1), wherein the

spindle motor is braked while the actuator arm assembly is retracted (see col. 5, lines 19-49 and col. 6, lines 24-36 of Patton, III).

Although Patton, III discloses a voltage regulator (or power stabilizer) that is well known to have the DC-to-DC conversion function, Patton, III fails to mention specifies of the DC-to-DC converter within voltage regulator (or voltage/power stabilizer). Kanda et al is relied upon for the stabilizer (or regulator) with a positively mention of the DC-to-DC conversion function or converter stabilizer (or regulator) – see col. 20, lines 34-61 and col. 21, lines 23-39 of Kanda et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the regulator (stabilizer) of Patton, III to including the DC/DC converter as taught by Kanda et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide a constant drive current to the VCM as suggested in col. 11, line 36 to col. 12, line 11 of Kanda et al.

Regarding claim 2: Patton, III depicts in figure 2 that wherein the DC conversion [DC-to-DC converter] includes an inductor, a switch, a diode, and a capacitor (capacitor is known to be part of the conversion circuit – see figure 8 of Kanda et al).

Regarding claim 3: Patton, III depicts the element 30 in figure 2 that wherein windings of the spindle motor are used as the inductor.

Regarding claim 4: Patton, III teaches that wherein the output voltage is larger than the back electromotive force voltage (in col. 5, lines 28-49 where Patton, III describes the out voltage of DC conversion and regulation of the converted voltage).

Regarding claim 5: Patton, III depicts in figure 2 that wherein the retract circuit is connected to an output portion of the DC [DC-to-DC] converter and is powered by the output voltage.

Regarding claim 6: the limitations of wherein the feedback circuit includes comparison circuitry for comparing the output voltage of the DC [DC-to-DC] converter to a predefined target voltage are considered satisfied because the regulator (element 42 in figure 2 of Patton, III) is well known to possess the noted functions.

Regarding claim 7: Patton, III depicts in figure 1 that wherein the feedback circuit opens the switch based upon a comparison of the output voltage to the predefined target voltage (see the associated descriptions for details).

Regarding claim 8: Patton, III teaches that wherein the feedback circuit further includes timing (element 56 in figure 2) circuitry (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claim 9: Patton, III teaches that wherein the timing circuitry has a fixed off period timer wherein the switch is closed following the fixed off-period (in col. 5, lines 39-42 where Patton, III describes the timing function in the DC conversion function).

Regarding claim 10: Patton, III depicts element 46 in figure 1 that wherein the feedback circuit includes low voltage limit circuitry, wherein the switch is closed permanently based upon the output voltage level following the fixed off-period.

Regarding claim 11: Patton, III teaches that wherein the timing circuitry has a variable off-period timer wherein the switch is closed following the variable off-period (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claim 12: Patton, III teaches that wherein the variable off-period is adjusted dependent upon the output voltage of the DC-to-DC converter during the variable off-period (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claim 13: Patton, III teaches that wherein the timing circuitry has a variable on-period timer wherein the switch is closed during the variable on-period (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claim 14: Patton, III teaches that wherein the variable on-period is adjusted dependent upon the output voltage of the DC-to-DC converter during the variable on-period (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claim 15: Patton, III teaches that wherein the timing circuitry has a maximum value for the variable off-period (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claim 16: Patton, III teaches that wherein the variable off-period is adjusted based upon the output voltage of the DC-to-DC converter during the variable off-period (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claim 17: Patton, III teaches that wherein the switch is closed permanently upon the variable off-period reaching the maximum value (in col. 4, line 53 to col. 5, line 10 and col. 5, lines 28-49 of Patton, III).

Regarding claims 18 and 20-25: method claims (18 and 20-25) are drawn to the method of using the corresponding apparatus claimed in claims (1-17). Therefore

method claims (18 and 20-25) correspond to apparatus claims (1-17) and are rejected for the same reasons of obviousness as used above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims (26-27) are rejected under 35 U.S.C. 102(b) as being anticipated by Patton, III (5889629).

Regarding claim 26: Patton, III discloses an apparatus for retracting (emergency parking or parking) a disk drive actuator arm assembly (as depicted in figure 1 of Patton, III), including:

a retract means (in col. 5, lines 19-49 where Patton, III describes a retraction function (or parking) of the actuator arm when power failure or undervoltage is detected which is in line with page 14 lines 3-13 of the instant specification) for retracting the disk drive actuator arm assembly;

a motor means (as depicted in figure 2) for generating a back electromotive force voltage (see col. 5, lines 19-49 of Patton, III);

a converter means for converting the back electromotive force voltage into an output voltage for powering the retract means, wherein the retract means retract the disk drive actuator arm assembly while the motor means are braked (see col. 5, lines 19-49 Patton, III); and

a feedback means for controlling the converter means (as depicted in figure 1 and see the associated descriptions for details).

Regarding claim 27: Patton, III teaches that wherein the feedback means includes: a comparison means for comparing the output voltage to a predefined target voltage (or the representation of the target); a switch means for switching the converter means; and a timer means for timing the switch means (in col. 5, lines 19-49 and col. 4, 53 to col. 5, line 11 of Patton, III).

Regarding claim 33: method claim (33) is drawn to the method of using the corresponding apparatus claimed in claims (26-27). Therefore, the method claim 33 corresponds to apparatus claims (26-27) and is rejected for the same reasons of anticipation as used above.

Claims (28-29) rejected under 35 U.S.C. 102(e) as being anticipated by Kanda et al (6594102).

Regarding claim 28: Kanda et al discloses an apparatus for retracting a disk drive actuator arm assembly (as depicted in figure 3 and see col. 15, lines 6-42 of Kanda et al), including:

a spindle motor (element 15 in figure 1 of Kanda et al) which generates a back electromotive force voltage (see col. 11, lines 36-59 of Kanda et al);

a feedback circuit connected to the DC-to-DC converter (see figure 16 and col. 20, lines 33-46 of Kanda et al) and controlling switching thereof (see col. 20, lines 47-61 of Kanda et al);

a retract circuit (element 217 in figure 3), connected to the DC-to-DC converter and powered thereby (see col. 20, lines 33-61); and

a voice coil motor (VCM – element 16 in figure 3) activated by the retract circuit and operating to retract the actuator arm assembly (element 13 in figure 1), wherein the spindle motor is braked while the actuator arm assembly is retracted (braking the spindle motor while retracting is considered inherent because Kanda describes the braking spindle motor function for generating back-EMF in order to accomplishing the retraction in col. 6, line 65 to col. 7, line 14).

Regarding claim 29: Kanda et al teaches that wherein the feedback circuit opens the switch based upon a comparison of the output voltage to the predefined target voltage (in col. 11, line 36 to col. 12, line 11 of Kanda et al).

Regarding claims 30-32: method claims (30-32) are drawn to the method of using the corresponding apparatus claimed in claims (28-29). Therefore method claims (30-32) correspond to apparatus claims (28-29) and are rejected for the same reasons of anticipation as used above.

Response to Arguments

Applicant's arguments filed 1/9/04 have been fully considered but they are not persuasive because the arguments are directed to the newly amended claims. Furthermore, applicant's arguments with respect to claims 1-18 and 20-27 have been considered but are moot in view of the newly amended claims and the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patton, III could be read on claims (28-32) but not used in this office action because for the obvious reasons as noted in the above rejections. Kanda et al could be read on claims (1-18, 20-27 and 33) but not used in this office action

because of among the other reasons. Shenai et al (5959439) and Yaegashi (US 2001/0024339) are cited for DC/DC converter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Wong whose telephone number is (703) 305-7772.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (703) 308-4825. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

kw

26 Mar 04

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